AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method for manufacturing an optical fiber preform by MCVD comprising:

a depositing process for forming clad and core deposition layers on an inner wall of a quartz tube;

a collapsing process for collapsing the quartz tube on which the deposition layers are formed by heating the quartz tube to a temperature higher than a softening temperature of the deposition layers;

an etching-and-collapsing process for etching and collapsing the quartz tube at the same time by injecting an reaction gas for etching into the quartz tube together with heating the tube at a temperature higher than the softening temperature such that the tube has an inner diameter within the range of 2 to 4 mm in a region which is useable as an optical fiber preform, just after the etching-and-collapsing process and just before a following closing process;

wherein the tube is kept within said range of diameters ~~at said time~~ just after the etching-and-collapsing process and just before the following closing process by controlling the collapse rate and the etching rate, wherein the collapse rate is controlled by controlling the surface temperature, inner temperature, and inner pressure of the tube, and the etching rate is controlled by controlling the flow rate ratio of component gases comprising the reaction gas; and

a closing process for forming an optical fiber preform without a hollow portion by heating the quartz tube to a temperature higher than the softening temperature after the etching-and-collapsing process,

whereby an index dip occurring at a center of the optical fiber preform core is decreased or eliminated.

2. (Previously Amended) The method for manufacturing an optical fiber preform according to claim 1,

wherein, in the etching-and-collapsing process, the reaction gas for etching is a mixture gas of an etching gas and oxygen, and a flow rate ratio of the oxygen to the etching gas is between 2.5:1 and 30:1.

3. (Previously Amended) The method for manufacturing an optical fiber preform according to claim 2,

wherein a flow rate of the oxygen is within the range of 50 to 120 sccm, and a flow rate of the etching gas is within the range of 4 to 20 sccm.

4. (Previously Amended) The method for manufacturing an optical fiber preform according to claim 1,

wherein, in the etching-and-collapsing process, a collapse rate of the quartz tube is 0.5 to 3.0mm^2/min.

5. (Cancelled)

6. (Previously Amended) The method for manufacturing an optical fiber preform according to claim 1,

wherein the etching-and-collapsing process is performed from a gas input portion to a gas output portion along a longitudinal direction of the quartz tube.

7. (Previously Amended) The method for manufacturing an optical fiber preform according to claim 1,

wherein, in the etching-and-collapsing process, a rotational velocity of the quartz tube is 15 to 30rpm, a movement velocity of a heat source is 1 to 40mm/min, and a surface temperature of the tube is 2000 to 2400°C.

8. (Original) The method for manufacturing an optical fiber preform according to claim 1,

wherein the collapsing process is performed 1 to 4 times.

9. (Original) The method for manufacturing an optical fiber preform according to claim 1,

wherein, in the collapsing process, an inner pressure of the quartz tube is kept in a positive pressure of 0 to 10mmWC in order to make a multi-mode optical fiber preform.

10. (Original) The method for manufacturing an optical fiber preform according to claim 1,

wherein, in the collapsing process, an inner pressure of the quartz tube is kept in a negative pressure in order to make a single-mode optical fiber preform.

11. (Original) The method for manufacturing an optical fiber preform according to claim 1,

wherein the collapsing process is performed together with injecting O_2 or Cl_2 into the quartz tube.

12. (Original) The method for manufacturing an optical fiber preform according to claim 11,

wherein a flow rate of O_2 or Cl_2 is 1.2 to 2.4 slpm.

13. (Original) The method for manufacturing an optical fiber preform according to claim 1,

wherein the closing process is performed from a gas output portion to a gas input portion along a longitudinal direction of the quartz tube.

14. (Original) The method for manufacturing an optical fiber preform according to claim 13,

wherein the closing process is performed together with injecting O_2 or Cl_2 into the quartz tube.